

CLAIMS

What is claimed is:

1. A system for measuring a phase difference between light signals reflected from both sides of a first object comprising:

a first miniature optic system having

a first light source for transmitting a first light signal toward a first surface of said first object, said first light signal reflecting off said first surface having a first and second reflected polarized light signal components;

a first polarization splitter for separating the first reflected polarized light signal component and the second reflected polarized light signal component from said reflected first light signal;

a first detector for detecting a first intensity of said first reflected polarized light signal component;

a second detector for detecting a second intensity of said second reflected polarized light signal component; and

a first phase determinator for determining a first difference in phase between said first and second reflected polarized light signal components based upon said first and second intensities; and

a second miniature optic system having:

a second light source for transmitting a second light signal toward a second surface of said first object, said second light signal reflecting off said second surface having a third and fourth reflected polarized light signal components;

a second polarization splitter for separating the third reflected polarized light signal component and the fourth reflected polarized light signal component from said reflected second light signal;

a third detector for detecting a third intensity of said third reflected polarized light signal component;

a fourth detector for detecting a fourth intensity of said fourth reflected polarized light signal component; and

a second phase determinator for determining a second difference in phase between said third and fourth reflected polarized light signal components based upon said third and fourth intensities.

2. The system of claim 1, wherein said first object is one of a magnetic disk and a silicon wafer.

3. The system of claim 2, wherein said first and second phase determinators comprise:

a texture eliminator for determining a difference between said first and second intensities to reduce the effects of a texture on said first object.

4. The system of claim 1, wherein said first miniature optic system further comprises:

a first thickness determinator for determining a thickness of a lubricant on said first surface based upon said first difference in phase.

5. The system of claim 4, wherein said second miniature optic system further comprises:

a second thickness determinator for determining a thickness of a lubricant on said second surface based upon said second difference in phase.

6. The system of claim 1, wherein said first miniature optic system further comprises:

a first carbon thickness determinator for determining a thickness of a carbon layer of said first surface based upon said first difference in phase.

7. The system of claim 6, wherein said second miniature optic system further comprises:

a second carbon thickness determinator for determining a thickness of a carbon layer of said second surface based upon said second difference in phase.

8. The system of claim 1, wherein said first miniature optic system further comprises:

a first magnetic identifier for determining a magnetic characteristic of said first surface based upon said first difference in phase.

9. The system of claim 8, wherein said second miniature optic system further comprises:

a second magnetic identifier for determining a magnetic characteristic of said second surface based upon said second difference in phase.

10. The system of claim 1, wherein said first miniature optic system further comprises:

a first Kerr effect determinator for measuring the magneto-optic Kerr effect of said first surface based upon said first difference in phase.

11. The system of claim 10, wherein said second miniature optic system further comprises:

a second Kerr effect determinator for measuring the magneto-optic Kerr effect of said second surface based upon said second difference in phase.

12. The system of claim 10, wherein said first miniature optic system further comprises:

a first defect determinator for determining whether a first defect exists at a first location on the first surface based upon said first and second intensities.

13. The system of claim 12, wherein said second miniature optic system further comprises:

a second defect determinator for determining whether a second defect exists at a first location on the second surface based upon said third and fourth intensities.

14. The system of claim 13, further comprising:

a first mechanical scribe for marking said first location to identify said first defect.

15. The system of claim 14, further comprising:

a second mechanical scribe for marking said second location to identify said second defect.

16. The system of claim 14, further comprising:

a scribe positioner for moving said first mechanical scribe to a position substantially adjacent to said first location before marking said first location.

17. The system of claim 1, wherein said first miniature optic system further comprises:

a first defect determinator for determining whether a first defect exists at a first location on the first surface based upon said first and second intensities.

18. The system of claim 17, wherein said second miniature optic system further comprises:

a second defect determinator for determining whether a second defect exists at a first location on the second surface based upon said third and fourth intensities.

19. The system of claim 18, further comprising:

a first mechanical scribe for marking said first location to identify said first defect.

20. The system of claim 19, further comprising:

a second mechanical scribe for marking said second location to identify said second defect.

21. The system of claim 19, further comprising:

a scribe positioner for moving said first mechanical scribe to a position substantially adjacent to said first location before marking said first location.

22. The system of claim 1, wherein said first reflected polarized light signal component and said second reflected polarized light signal are orthogonally polarized.

23. The system of claim 1, wherein said first reflected polarized light signal component and said second reflected polarized light signal are non-orthogonally polarized.

24. The system of claim 1, wherein said third reflected polarized light signal component and said fourth reflected polarized light signal are orthogonally polarized.

25. The system of claim 1, wherein said third reflected polarized light signal component and said fourth reflected polarized light signal are non-orthogonally polarized.